

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,743	07/31/2001	Stepan Sokolov	SUN1P832/P6211	3944

22434 7590 07/15/2004
BEYER WEAVER & THOMAS LLP
P.O. BOX 778
BERKELEY, CA 94704-0778

EXAMINER

TANG, KUO LIANG J

ART UNIT PAPER NUMBER

2122

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/919,743

Applicant(s)

SOKOLOV ET AL.

Examiner

Kuo-Liang J Tang

Art Unit

2122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/19/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the application filed on 7/31/2001.

The priority date for this application is 07/31/2001.

Claims 1-20 are pending and have been examined.

Specification

2. The abstract of the disclosure is objected to because the abstract of the disclosure exceeds 150 words in length and more than one paragraph. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities:

page 9, Section 0034, lines 5, "232" should be "302".

page 9, Section 0035, lines 7, "Thereafter, at operation 410, the memory addresses" should be "Thereafter, at operation 408, the memory addresses".

Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 2122

3. Claims (1-2, 4-7), (8-12) and (16-19) are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims (1-5), (8-11) and (18-19) of co-pending Application No. 09/886,454 (hereinafter '454) respectively.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following observation.

Instant Claim	'454 Claim
<p>1. A Java virtual machine, comprising: a first portion of memory including a plurality of Java object representations, wherein each of said Java object representations consists of: a first reference to an internal class representation of a class associated with a Java object, and a second reference to instance fields associated with said Java object.</p> <p>2. A Java virtual machine as recited in claim 1, wherein said Java virtual machine further comprises: a second portion of memory including: internal class representations of Java</p>	<p>1. In a Java computing environment, a Java object representation suitable for use by a Java virtual machine, said a Java object representation comprising: a first reference to an internal class representation of said Java object; a second reference to instance fields associated with said Java object; and wherein</p>

classes associated with said first references, and instance fields of Java objects referenced by said second references.

4. A Java virtual machine as recited in

claim 3, wherein

said first reference is a direct reference to said internal class representation of said Java object.

5. A Java virtual machine as recited in

claim 4, wherein

said second reference is a reference to an array of references, and wherein each reference in said array of references is a reference to an instance field associated with said Java object.

6. A Java virtual machine as recited in

claim 5, wherein each of

said first and second references are

said first reference is a direct reference to said internal class representation of said Java object.

2. A Java object representation as recited in

claim 1, wherein

said second reference is a reference to an array of references, and wherein each reference in said array of references is a reference to an instance field associated with said Java object.

3. A Java object representation as recited in

claim 1, wherein

said first reference is allocated as four bytes.

<p>allocated in four bytes.</p> <p>7. A Java virtual machine as recited in claim 6, wherein</p> <p>said internal class representation includes a header of a predetermined size, and wherein a method table associated with said Java object is allocated immediately after said header.</p>	<p>4. A Java object representation as recited in claim 1, wherein</p> <p>said second reference is allocated as four bytes.</p> <p>5. A Java object representation as recited in claim 1, wherein</p> <p>said internal class representation includes a header of a predetermined size, and wherein a method table associated with said Java object is allocated immediately after said header.</p>
<p>8. In a Java computing environment, a method of identifying active Java objects and active Java classes, said method comprising:</p> <p>reading a cluster of Java object representations, said Java object representations being arranged</p>	<p>8. A method for representing a Java object in a virtual machine, said method comprising:</p>

<p>sequentially;</p> <p>determining whether Java objects or Java classes are to be identified;</p> <p>marking in memory addresses that correspond to Java objects when said determining determines that Java objects are to be identified; and</p> <p>marking in memory addresses that correspond to Java classes when said determining determines that Java classes are to be identified.</p> <p>9. A method as recited in claim 8, wherein each of said Java object representations consists of:</p> <p>a first reference to an internal class representation of a class associated with a Java object, and a second reference to instance fields associated with said Java</p>	<p>allocating a first reference in a memory portion of said virtual machine, wherein said first reference is a reference to an internal class representation of said Java object;</p>
--	--

object.	allocating a second reference in a memory portion of said virtual machine, wherein said second reference is a reference to instance fields associated with said Java object; and
10. A method as recited in claim 9, wherein said first reference is a direct reference to said internal class representation of said Java object.	wherein said first reference is a direct reference to said internal class representation of said Java object.
11. A method as recited in claim 9, wherein said second reference is a reference to an array of references, and wherein each reference in said array of references is a reference to an instance field associated with said Java object.	9. A method as recited in claim 8, wherein said second reference is a reference to an array of references, and wherein each reference in said array of references is a reference to an instance field associated with said Java object.
12. A method as recited in claim 9, wherein said first and second references are	10. A method as recited in claim 9, wherein said first reference is allocated as four

allocated as four bytes.	bytes. 11. A method as recited in claim 9, wherein said second reference is allocated as four bytes.
16. A computer readable medium including computer program code for identifying active Java objects and active Java classes: computer program code for reading a cluster of Java object representations, said Java object representations being arranged sequentially in said cluster; computer program code for determining whether Java objects are to be identified; computer program code for marking in memory address that correspond to Java	18. A computer readable media including computer program code for a Java object representation suitable for use by a Java virtual machine, said computer readable media comprising:

<p>objects when said determining determines that Java object are to be identified; and</p> <p>computer program code for marking in memory address that correspond to Java classes when said determining determines that Java classes are to be identified.</p>	
<p>17. A computer readable medium as recited in claim 16, wherein each of said Java object representations consists of:</p> <p>a first reference to an internal class representation of a class associated with a Java object, and</p> <p>a second reference to instance fields associated with said Java object.</p>	<p>computer program code for</p> <p>a first reference to an internal class representation of said Java object;</p> <p>computer program code for</p> <p>a second reference to instance fields associated with said Java object; and</p>
<p>18. A computer readable medium as recited in claim 17, wherein</p> <p>said first reference is a direct reference to said internal class representation of said Java object.</p>	<p>wherein</p> <p>said first reference is a direct reference to said internal class representation of said Java object.</p>

19. A computer readable medium as recited in claim 18, wherein said second reference is a reference to an array of references, and wherein each reference in said array of references is a reference to an instance field associated with said Java object.	19. A computer readable media as recited in claim 18, wherein said second reference is a reference to an array of references, and wherein each reference in said array of references is a reference to an instance field associated with said Java object.
---	--

The limitations recited in claims 1-2 and 4-7 are obvious variations of limitation in '454 Claims 1-5.

The limitations recited in claims 8-12 are obvious variations of limitation in '454 Claim 8-11.

The limitations recited in claim 16-19 is obvious variations of limitation in '454 Claim 18-19.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 8-12, 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Crelier, US Patent No. 6,151,703.

As Per Claim 1, Crelier teaches that a development system having a client which employs a virtual machine for executing programs written in the Java programming language is described. (E.g. see Abstract and associated text). In that Crelier discloses the method that covering the steps of:

“a first portion of memory including a plurality of Java object representations, wherein each of said Java object representations consists of:

a first reference to an internal class representation of a class associated with a Java object (E.g. see FIG. 4, object handle 401 and associated text, e.g. col. 8:16-17), and

a second reference to instance fields associated with said Java object (E.g. see FIG. 4, pointer 421 and associated text, e.g. col. 8:21-22).”

As Per claim 2, the rejection of claim 1 is incorporated and further Crelier teaches:

“a second portion of memory including: internal class representations of Java classes associated with said first references (E.g. see FIG. 4, method table 420 and associated text, e.g.

Art Unit: 2122

col. 8:16-17), and instance fields of Java objects referenced by said second references (E.g. see FIG. 4, ClassClass descriptor 430 and associated text, e.g. col. 8:21-22)."

As Per claim 3, the rejection of claim 2 is incorporated and further Crelier teaches:

"wherein said plurality of Java object representations have the same size." (E.g. see col. 10:62-64).

As Per claim 4, the rejection of claim 3 is incorporated and further Crelier teaches:

"said first reference is a direct reference to said internal class representation of said Java object." (E.g. see col. 8:62-64).

As Per claim 5, the rejection of claim 4 is incorporated and further Crelier teaches:

"wherein said second reference is a reference to an array of references (E.g. see col. 8:13-14), and wherein each reference in said array of references is a reference to an instance field associated with said Java object (E.g. see col. 8:19-20)."

As Per claim 6, the rejection of claim 5 is incorporated and further Crelier teaches:

"wherein each of said first and second references are allocated in four bytes." (E.g. see col. 10:62-64).

As Per claim 8, Crelier teaches:

“reading a cluster of Java object representations, said Java object representations (E.g. see col. 3:44-45) being arranged sequentially;” (E.g. see col. 8:13-14 and col. 8:19-20);

“determining whether Java objects (E.g. see col. 8:16-17) or Java classes (E.g. see col. 8:62-64) are to be identified (E.g. see col. 8:42-43, “thishash and totalhash”) ;”

“marking in memory addresses that correspond to Java objects when said determining determines that Java objects are to be identified;” (E.g. see col. 8:42, “unsigned long thishash”) and

“marking in memory addresses that correspond to Java classes when said determining determines that Java classes are to be identified.” (E.g. see col. 8:43, unsigned long totalhash”)

As per Claims 9 and 11-12, the rejection of claim 8 are incorporated and are rejected under the same reason set forth in connection of the rejection of claims 2, 5-6 respectfully.

As Per claim 10, the rejection of claim 9 is incorporated and further Crelier teaches:

“wherein said first reference is a direct reference to said internal class representation of said Java object.” (E.g. see col. 8:62-64).

As Per claim 15, the rejection of claim 9 is incorporated and further Crelier teaches:

“wherein said method is used by a virtual machine for garbage collection of Java objects and Java classes.” (E.g. see col. 1:36-40).

Art Unit: 2122

As Per Claim 16 is the computer-readable medium claim corresponding to the method claim 8 and is rejected under the same reason set forth in connection of the rejection of claim 8.

As per Claims 17-20, the rejection of claim 16 are incorporated and are rejected under the same reason set forth in connection of the rejection of claims 9-12 respectfully.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crelier in view of Brown et al., US Patent No. 6,237,043 (hereinafter Brown).

As Per claim 7, the rejection of claim 6 is incorporated and further Crelier teaches "wherein a method table associated with said Java object is allocated immediately after said header" (E.g. see col. 10:62-64). Crelier does not explicitly disclose said internal class representation includes a header of a predetermined size. However, Brown in an analogous art teaches "wherein said internal class representation includes a header of a predetermined size". (E.g. see col. 3:58-61). Therefore, it would have been obvious to incorporate the teaching of Brown into the teaching of Crelier incorporate the method of including header with memory

Art Unit: 2122

allocated area within the object onto the method of executing Java programming code. The modification would have been obvious because one of ordinary skill in the art would have been motivated to predetermine the header size to not to overhead the memory as suggested by Brown (E.g. see col. 3:35-48).

6. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crelier in view Applicant's admitted prior art.

As Per claim 13, the rejection of claim 9 is incorporated and further Crelier does not explicitly disclose removing internal class representations that have not been marked. However, Applicant's admitted prior art teaches "removing internal class representations that have not been marked". (E.g. see Specification page 4, section 0011). Therefore, it would have been obvious to incorporate the teaching of Applicant's admitted prior art into the teaching of Crelier incorporate the method of removing internal class representations that have not been marked. The modification would have been obvious because one of ordinary skill in the art would have been motivated to perform a garbage collection to save resources.

As Per claim 14, the rejection of claim 9 is incorporated and further Crelier does not explicitly disclose removing Java objects that have not been marked. However, Applicant's admitted prior art teaches "removing Java objects that have not been marked". (E.g. see Specification page 4, section 0011). Therefore, it would have been obvious to incorporate the teaching of Applicant's admitted prior art into the teaching of Crelier incorporate the method of removing Java objects that have not been marked. The modification would have been obvious

Art Unit: 2122

because one of ordinary skill in the art would have been motivated to perform a garbage collection to save resources.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang J Tang whose telephone number is 703-305-4866.

The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q Dam can be reached on 703-305-4552.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306.

Kuo-Liang J. Tang

Software Engineer Patent Examiner

Anthony Nguyen Ba

ANTONY NGUYEN-BA
PRIMARY EXAMINER